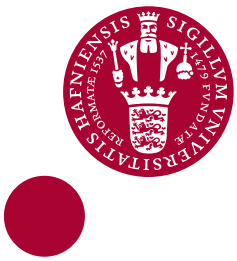

China as an Emerging Biotech Power

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China as an 'Emerging Biotech Power'

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Abstract
Asia's dramatic entry on to the global biotech scene has not gone unnoticed by commentators and social scientists alike. Countries like China, India, South Korea and Singapore have been identified as 'emerging biotech powers'. Consequently, scholars have begun examining the particularities of how biotechnologies (e.g. stem cell science, genetic testing and reproductive medicine) have come to be taken up and grounded in a variety of cultural, legal and socio-economic contexts. They have also examined how governments, scientists, clinicians and others have been engaged in efforts to build up endogenous biotech sectors as a part of nation building strategies. In this paper, rather than attempting to answer questions of what makes biotechnology particularly Asian, I will instead investigate how demarcations and boundaries are mooted in global negotiations of what constitutes 'good' biotechnology. The analysis is based on a collaborative project between Chinese and European scientists and experts on the ethical governance of biomedical and biological research. I show how an underlying condition for the negotiations that took place within this collaboration was the proposition that *difference matters* when it comes to developing, organising, carrying out and overseeing biotechnological research in a particular country.

Keywords
Biotechnology, China, bioethics, informed consent

Introduction

At a workshop on ethical challenges surrounding stem cell research held in Shanghai in 2007, one of the presenters projected an introductory slide on to the screen behind him with the words "Open in 2009" in bold. The backdrop of the slide was an architect's portrayal of a spectacular new biomedical research complex under construction in the south of China. The presenter had recently returned to China from the USA to head up a team of embryonic stem cell researchers at this new research centre. Other presenters had similar slides, and during discussions, the mood of the workshop was captured in the reflections of one workshop participant: "One of the characteristics of Chinese policies on stem cell research is the ambition to be a power in bioscience and biotechnology. A huge amount of resources invested in it". A year later, during a site visit to a biotechnology research institution at another workshop in Shenzhen, participants were introduced to an impressive wall display featuring several *Nature* cover stories stemming from their research. Following a guided tour of the institute filled with numerous multi-million-dollar DNA sequencing and digital data storage machines, we each received a postcard featuring a cartoon of a staff

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member answering an awed group of international visitors (like ours) – "Wow so many machines!" – with a deadpanned "It's still not enough".

In recent years, a string of publications have analysed Asia's dramatic entry on to a global biotech scene[1]. State-led investment programmes, turning brain-drain into brain-gain by luring back young researchers from Europe and America, political mobilisation around biotechnology as a potential engine of economic growth, nationalist aspirations in a global race 'to be the first' as well as anxieties surrounding biosecurity risks have all been highlighted as catalysts of "Asia's Rising Science and Technology Strength"[2]. With titles and sub-titles like 'Biopolitics in Asia', 'Biopolitics in China', 'Asian Biotech' and 'imagining biotech India', one of the common tasks of this literature has been to examine whether there is something particular to biotechnology in Asia, or indeed whether there is something which might qualify as Asian biotechnology (presumably as opposed to Western).

In a special issue of *New Genetics and Society* on the theme of 'Biopolitics in Asia', Herbert Gottweis suggests that "despite all general trends towards globalization a distinctive picture of biopolitics in Asia is in the process of emerging… Asia today is neither a 'Wild East' nor simply, one big, research and experimental population in the service of the global bioeconomy"[3]. Instead, contributors to the special issue show how governments, scientists and others are engaged in 'bionational' efforts to build up endogenous biotech sectors. In a similar vein, Bharadwaj has argued that in the context of the rise of neo-India in a global biotechnology sector, "the twentieth-century development discourse which privileged the unidirectional flow of knowledge from the 'global' North/developed to the 'local' South/developing is now both an untenable orthodoxy and an unsustainable project"[4]. The point being that we need to approach these developments in India and other Asian countries as 'biotechnological autoproduction' rather than 'mere' technology transfer. Ong and Chen, on the other hand, shift focus from what is happening in Asia to the question of what it is that makes biotechnology Asian. 'Asian biotech', they suggest, denotes a "historical moment when biotechnologies articulate powerful nationalist aspirations in newly affluent Asia" as contributors to their volume show how biotechnology harnesses and aligns with ongoing nation-building efforts thereby palpably contributing to the negotiation and production of

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'Asianness'[5]. For example, in a chapter on 'Chinese DNA' Wen-Ching Sung shows how the "introduction of genomics since the 1990s… adds another spin to the discourses and practices on China's ethnic categorization"[6], while Charis Thompson analyses the 'Koreanness' of fallen stem cell scientist Hwang Woo Suk who had suggested that dexterous Korean chop stick users had sharpened the cell work done in his laboratory[7].

In this article, I will show how difference is actively mobilised on a global scale in the realm of biotechnology. Rather than attempting to answer this question of what makes/when is biotechnology particularly Asian, I will instead investigate how demarcations and boundaries are mooted in global negotiations of what constitutes 'good' biotechnology. Through his studies of mobilisation practices among indigenous activists of the Colombian Pacific, Arturo Escobar has argued that an important way in which a politics of difference plays out is in struggles against the terms of globality. "[P]eople mobilize against the destructive aspects of globalization from the perspective of what they have been and what they are at present... in the defense of place from the perspective of the economic, ecological, and cultural difference that their landscapes, cultures, and economies embody in relation to those of more dominant sectors of society"[8]. Indeed, as noted in the introduction to this special issue, 'difference' has analytically often been used in contexts of resistance, as a way to circumvent hegemonies and hierarchies and to stake claims 'from below'. My analysis will show how difference can also be mobilized by 'dominant sectors of society', in my case the biotech sector, in the making of the figure of an 'emerging biotech power'. That is to say, the mobilisation of difference is not something restricted to emancipatory struggles against dominance, but can also be found in concrete contexts of nation-building led by scientists, government officials, lawyers and other experts.

The context within which I will examine this field of problematisation is that of an international collaborative project between Chinese and European social and natural scientists that took place over a three-year period (2006-2009) called BIONET[9]. Over the course of these years I participated in and helped to organise a series of 6 workshops and conferences, five of which took place in China (Beijing, Shanghai, Changsha, Xian and Shenzhen)[10]. These events focused on ethical challenges surrounding the governance of biomedical research involving volunteer human subjects

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in the fields of stem cell research, clinical trials and genomics and were attended by more than 300 leading life scientists, ethicists, lawyers, social scientists as well as government representatives from China and Europe. Simultaneous translation was provided for European and Chinese participants at each of these events and presentations and discussions were recorded and summarised in workshop reports. The objective of these events was to map out practices of ethical governance of biomedical and biological research in China and Europe. The following analysis is based on my attendance and participation in these events (including my field notes), informal discussions with participants during lunches and dinners as well as the reports that were prepared during the course of the project. I have read through my field notes, copies of presentation slides as well as the workshop reports to identify common themes and issues. As such what follows is an analysis of *one particular forum* of global negotiation of difference.

I begin the article by asking what kind of biotechnology it is we are talking about that apparently can be characterised in terms of particular national or regional traits – namely a global biotechnology. I then move on to analyse how difference was explicitly mobilised during the course of the workshop and conference presentations and discussions which all addressed in some way the question of what makes biotechnological research 'ethical'. I focus in particular on two kinds of difference that were consistently brought up during the project over the three years. Firstly, a kind of carving out of a competitive advantage niche and secondly, debates around whether bioethics are universal and if so whether that allows space for an 'Asian bioethics' or indeed 'Chinese bioethics'. I conclude by reflecting on how difference helps us to think about global biotechnology.

Global biotechnology

There is nothing particularly 'new' about life sciences research, not even about some of the much-hyped 21st-century fields of genomics or regenerative medicine. Both have long histories dating back decades. Yet new developments are of course happening within these fields, many of which are linked to ongoing technological developments on the one hand, and globalisation processes on the other. A 'molecular gaze' has emerged out of the life sciences propelled by high-powered

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microscopy and imaging technologies as well as the development of DNA sequencing techniques and associated bioinformatics computing software[11]. At the same time, life science has become mobile as scientists, biological samples, digital information databases, technologies and biomedical treatments travel across national and continental borders. A biological sample procured in one place can be FedExed across the world to be sequenced and chemically analyzed and the information derived can be electronically transmitted to relevant parties around the world. A biomedical treatment developed in Switzerland can be transported to China for clinical testing on Chinese volunteers before being approved for use on American citizens. Immortalised stem cell lines can be ordered online from various stem cell banks and shipped globally. And so forth.

Yet this globalisation of biotechnological research has raised numerous questions about the ethics of such endeavours. According to which standards should such research be judged? Whose ethical guidelines and regulations are applicable in situations where Chinese and European scientists collaborate? Which safeguards should be put in place to avoid exploitation of vulnerable patients and populations? These are not logistical questions concerning how best to organize scientific collaboration projects most efficiently, rather they are questions which concern what it is that makes particular forms of research 'ethical'.

It is with these kinds of questions that the Sino-European project which I took part in engaged. As such, the presentations and discussions that I observed were characterised by exchanges between Chinese and European scientists and experts regarding how to go about ensuring that biotechnological research was ethical when multiple languages, cultural backgrounds, socio-economic contexts, regulatory traditions and the like were at stake. The common point of departure was that for biotechnological research requiring volunteer human subjects (such as stem cell research, genomic research and clinical trials) to be 'good' not only did it have to be scientifically rigorous and efficiently organised, it also had to be 'ethically sound'. Yet despite the existence of such global reference documents as the Helsinki Declaration on Ethical Principles for Medical Research Involving Human Subjects or the Universal Declaration on Bioethics and Human Rights, there was plenty of room for interpretation and negotiation as to how such universal principles might apply in particular contexts. It is on the basis of my observations of such

negotiations between workshop participants that I present the following analysis of difference in global biotechnology[12]. What I will show is how an underlying condition for such negotiations to take place was the proposition that *difference matters* when it comes to developing, organising, carrying out and overseeing biotechnological research in a particular country.

Many different Chinas

Let us begin with the question of how *can* biotechnological research be organised, carried out and overseen in China? As noted in the opening of this article, there can be no question about the stated ambition of political leaders, government officials and scientists that China become a so-called 'global player' in biotechnology. This ambition has been backed up by state investment programmes, new laboratory facilities as well as regulatory reforms. And one can already discern the results of this strategy in the form of one of the world's largest genome sequencing centres, an increasing number of published articles in renowned life science journals stemming from research units in China as well as a sharp increase in the number of international research collaborations involving Chinese partners[13].

Just as Sunder Rajan has shown how numerous actors are currently "building clinical research infrastructure in India [while] also promoting India as a clinical trial destination globally"[14], the same can be said of China. Indeed, in 2007, a report by the Financial Times suggested that 274 of those clinical trials registered on the US government's clinicaltrials.gov were being carried out in China while 260 were being carried out in India[15]. At a workshop held in Xian, a senior medical college representative proclaimed that "we welcome more clinical trials in China, we are ready". In the workshop discussions, the 'attractive' characteristics of China as a clinical trials destination were debated. Clinicians and other experts pointed out that the country had a large population and relatively easy patient recruitment, it had good quality medical and research infrastructure at substantially lower costs, and perhaps most importantly, a growing domestic pharmaceuticals market. Yet not only have government officials, scientists, companies and other actors been engaged in building up a physical clinical research infrastructure, over the last decade or so, they

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have also been engaged in the building up of what Reubi has referred to as the 'soft infrastructure' of biomedical research ethics[16]. As pointed out by a lawyer in our Shanghai workshop,

"almost every bioethical aspect regarding biomedical manipulations has been addressed to protect the rights of human subjects and public morality". He was referring to a flurry of ethical guidelines, regulations and norms that have been promulgated by both the Ministry of Health and the Ministry of Science and Technology in recent years regarding extraction and export of genetic resources (1998), stem cell research (2003), Good Clinical Practice (2003), scientific integrity and misconduct (2007), ethical review of biomedical research involving human subjects (2007) and more. Such an infrastructure of biomedical ethics was deemed necessary by some participants, not least as a way to counter misguided assumptions that "the development of biomedical research and biotechnology without constraint or unbounded freedom will allow China to more rapidly catch up with efforts in developed nations". The scandal surrounding and reputational damage caused by Korean stem cell scientist Hwang Woo Suk was raised in many presentations and discussions as a kind of warning: "Chinese science and technology could lose its essential integrity and public support both at home and abroad. The scandals over Hwang Woo Suk in [South] Korea and Chen Jin[17] in China convincingly illustrate this point".

Yet the China that was being assembled in these accounts was very much that of elite centres of excellence which had the resources and capacity to carry out large scale scientific research projects in accordance with international and national ethical guidelines. Other workshop participants were quick to point out a marked lack of capacity in many of the clinics and laboratories found in smaller cities, with some suggesting that one should indeed differentiate between high capacity centres of excellence and those lagging behind. Evoking anthropologist Adriana Petryna's notion of 'ethical variability'[18] one participant commented: "China is a big country. Implementation of ethical regulations varies drastically among regions and institutes. This situation may not be easily changed in a short time". There were, in other words, many different Chinas within China with access to vastly different amounts of resources, and when the case was made for China as an 'attractive' biotechnological research destination, this attraction was very specific to certain centres. An important point raised by numerous speakers concerned the gaps

that remained between regulations and guidelines on the one hand and the situation on the ground in many clinics and laboratories on the other.

Biomedical research infrastructure was not the only attraction that was flagged by participants at our many workshops. One of China's perhaps most internationally notorious features is its large population of some 1.2 billion people. This was an advantage, it was suggested, not only in terms of recruitment of volunteers into biomedical research, it also represented a kind of 'treasure trove' of, on the one hand, genetic diversity, and on the other a diverse disease profile (from infectious to lifestyle diseases), both of which were 'available', waiting to be researched upon. In a workshop on biobanking, a senior scientist explained how "there are 56 ethnic groups in China, each of them having independent inhabitation areas and some of them are genetically isolated as populations. In terms of genetic phenotypes, each ethnic group has its unique characteristics. There are significant differences in categories, enzyme systems, HLA antigens and incidences of some genetic diseases." One could therefore take biomedical advantage from the 'homogenous' marrying habits of particular cultural groups within China, but the task was urgent he pointed out since "at present, more and more youths are marrying across different nationalities, and as a result the genomes of some nationalities face the danger of extinction".

Yet, as already pointed out, it was not only the genetic diversity of China's 56 ethnic groups that was described as a valuable and 'attractive' research resource, the fact that China was in the midst of massive socio-economic transformation meant that China's population was host to a diversity of diseases which made it especially conducive to medical genomic research. For example, when introducing a large scale prospective cohort study aiming to determine environmental risk factors, life course causes and genetic risk factors underlying common chronic diseases, one of the project's scientists explained the reasoning behind choosing the city of Taizhou as their study site: "Why Taizhou? Well, it is located in the area connecting north and south China with an admixture of northern and southern populations. The population is right at the start of economic transformation and it is a well-established site for epidemiology studies with strong local government support".

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While there are clear similarities between for example, China and India, what I am suggesting here is that an important component of the casting of China as an 'emerging biotech power' has been the carving out of a competitive advantage niche that sets China apart, in particular, from the 'West'. Difference here, sets China apart in terms of the relatively low cost of its otherwise high quality biomedical research infrastructure but also in terms of its biological 'assets', which in turn parcels out different groups and areas *within* China in terms of genetic diversity and a diverse disease profile. So, not only is China's attractiveness as a biotech research site related to its difference from the West, but also to differences (or diversity) within China[19].

Overseeing biomedical research in China

What bound the various forms of biotech research covered in our workshops together was their reliance on volunteer human subjects, either as donors of biological samples (e.g. blood samples for genomic research or 'leftover embryos' from fertility treatment for stem cell research) and associated biographical data (e.g. about lifestyle, family medical history, socio-economic background) or as recipients of experimental therapies (e.g. new pharmaceuticals or stem cell therapies). As such these were forms of research which required not just scientific oversight in the form of peer review but also ethical oversight in the form of ethical review. The point being, as noted earlier, that for scientific research requiring volunteer human subjects to be 'good' not only did it have to be scientifically rigorous it also had to be ethically sound.

There is a growing critical literature on the shortcomings of what is sometimes referred to as 'global' bioethics, understood as a universalised and instrumentalised set of principles and practices aimed at safeguarding and protecting those individuals who voluntarily participate in biomedical research[20]. For the purposes of this paper I will not engage with this literature, I will instead show how during often lively debates about *the ways in which* ethical oversight of biomedical research should be organised, cultural and socio-economic differences were mobilised. There are two particular debates that I will recount in this section: the first concerns a debate between European and Chinese scientists about the moral status of an embryo in the context of human embryonic stem cell research, and the second concerns debates about the different forms

of interaction between researchers and volunteer human subjects that should or should not be allowed.

Chinese values

One of the most vocally contested areas of stem cell research worldwide has been that of human embryonic stem cell (hESC) research. Such research requires access to human embryos which has raised questions about whether or not a human embryo constitutes a human life and thereby requires appropriate protection and safeguards and if research on embryos is allowed, then under which circumstances can they be procured – e.g. should women and men be allowed to donate gametes for research purposes, should it be permissible to create embryos purely for research purposes, should hESC research only be carried out on so-called 'leftover embryos' from infertility treatment? One of the liveliest discussions in the course of our project took place in Shanghai when participants at our stem cell workshop discussed the moral status of a human embryo. Throughout the world, different countries have different legal positions on whether or not it should be permissible to carry out research on human embryos – some countries prohibit it while others allow it under specific conditions.

The discussion quickly centred on the question of when a human life begins – is it at the moment of fertilization (when egg and sperm mix), nidation (when an early embryo implants into the uterus), perception of 'primitive streak' (a structure in the embryo that becomes visible under the microscope around fourteen days after fertilisation) or birth? While the discussion was very technical concerning the biology of reproductive processes, it was clear that the answer to whether or not, or at which point, a human embryo constitutes a human life would not come from biology: "Ethical standards stem from cultural and religious background and they are highly diversified among different regions and countries." Some presenters suggested that in China a traditional Confucian view still prevailed and that the "governance of biotechnology and biomedical research should be exclusively based on unique Chinese culture, e.g. Confucian values and principles". According to Confucian principles, it was argued, "a person begins with birth and ends with death… and is an entity which has the capacity for social relationship" although "a

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human embryo is a human biological life, a precursor of person, not merely 'stuff' like placenta… so it deserves due respect: if there is no sufficient reason, it should not be permitted to manipulate or destroy it". Another participant pointed out that this view was very much in line with the United Kingdom's Warnock Committee who have suggested that there should be a "gradation in the respect accorded to a foetus as it develops from zygote to early embryo to its birth", although in Germany full moral status was accorded by the Embryo Protection Act to "any fertilized human oocyte after that point in time at which the pronuclei have fused, any later stage of its development and to any totipotent parts which could, under the proper circumstances, be able to develop into an individual being".

What this exchange between workshop participants gave insight into was precisely a negotiation of difference, however caricatured. What was it that counted as a Chinese, German or UK 'position' or view on the moral status of the embryo and how might such a view be 'established'? In the discussions that followed various processes for establishing a national position were discussed, including: public opinion polls, existing laws or law proposals and national Ethics Commissions. There was no clear answer to this latter question, rather various options were identified, though workshop participants did arrive at a conclusion: "each culture must find the right mix of biology, theology and metaphysics to satisfy it – to fit with its cultural narrative. 'Drawing the line' it seems paradoxically, [i]s both arbitrary and essential".

These kinds of discussion concerned ethical oversight of biomedical and biological research from a national point of view – a kind of national stewardship of biotech science. The questions of what forms of manipulation and disposal of early human life should or should not be allowed could not be answered within the confines of a laboratory, but rather required the involvement of other experts, members of the public, government officials, etc. Yet it was up to each country to organise the ways in which their respective inputs would be fed into the crystallising of some kind of a national position or 'consensus'. Notwithstanding the fact that multiple positions on the moral status of a human embryo might be found within a nation's borders, the conclusion amongst workshop participants seemed to be that this fell within a national remit. It should be pointed out that Chinese regulations do allow, as do UK regulations, research on human embryos up to

fourteen days after fertilisation and both countries are therefore described as having 'permissible' stem cell regulation which adds to their 'attraction' as global sites of stem cell research.

'Cultural sensitivity' in the recruitment of volunteers

Once a biomedical research project proposal has been ethically and peer reviewed and thereby funded, the everyday work of the principal investigators and/or clinicians begins. Research staff has to be hired and trained, informed consent protocols have to be designed and modified to fit target patients, recruitment efforts have to be put in motion and follow-up procedures have to be agreed upon. It is precisely this moment – when researchers and clinicians must interact with potential participants in biomedical research – that is considered ethically precarious. It is at this moment that possibilities for coercion, exploitation, inducement and undue influence emerge, which could be driven by commercial motives, personal career advancement considerations, lack of healthcare services in resource-poor settings, etc.

What I found during the course of our many workshops and conferences was that regardless of the type of biomedical research that was under scrutiny (stem cell research, biobanking or clinical trials), there seemed to be an ongoing negotiation around the precise *form* that interaction between researchers and potential research subjects should take place, *depending* on the particular context 'on the ground'. And one element of this context was the particular 'culture' that the research was to take place in. Let me show how by discussing the way in which the question of informed consent in the context of clinical trials and biobanking was debated by participants from China and Europe.

Ever since the Nuremberg code from 1949 insisted that when it comes to recruiting participants for medical research "the voluntary consent of the human subject is absolutely essential"[21], one of the most prominent tools to have been developed for ensuring that interaction between researchers and potential participants is ethical and appropriate has been the informed consent procedure/form. The conversation between researcher and potential participant, the form which explains the research, and the signature of the potential participant on that form are meant to

ensure voluntariness as well as symbolise respect for a person. As already noted, there is a vast literature on the shortcomings of such formalised approach to bioethics, what I will discuss here instead is how workshop participants argued for an adjustment of this process so as to fit a particular cultural and socio-economic context. So what kind of a 'Chinese context' could be discerned from the debates at our workshops?

I would point to two particular areas related to: 1) who has the authority to consent; 2) how to recruit in a climate of commercialisation. One of the assumptions behind the idea of genuine voluntary informed consent is autonomy – individuals are the ones who should be deciding whether he or she would like to participate in biomedical research as symbolised in the signature. The spectre of 'many Chinas' once again emerged in discussions about whether such an individualised approach to consent is at all relevant or realistic in certain contexts. Some speakers argued that since any kind of interaction with hospitals (whether for treatment or participation in medical research) in China had some kind of financial implications, then any decisions would always be taken up in the context of families, with heads of households often having a final say. Moreover, in the context of large scale biobanking projects requiring thousands of volunteers, for example from a particular ethnic community, consent would never be merely individual, as village leaders and other community heads would often have to sanction any kind of large scale medical research in their communities[22]. So there were certain circuits of authority that needed to be followed if medical research was to be made ethical in a particular context. And although such distinctions tend to caricaturise, many speakers pointed to a collectivist China vs. an individualist Europe as an important difference that it was crucial to take into account when adapting recruitment and informed consent procedures into Chinese contexts. Indeed BIONET's Expert Group[23] ended up recommending that "before any research collaborations [between Chinese and European researchers] are approved or begin, participating researchers must receive training on how potential research participants are to be engaged with, as well as on how informed consent is to be obtained, while focusing on the particularities of the kind of research at stake… as well as the socioeconomic and cultural context."[24]

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Secondly, as anyone with a minimum of interest in health care issues within China will know, over the last two decades medical care has come to be commercialised as collective insurance systems have been overtaken by individualised healthcare plans and out-of-pocket medical service fees. At many of our workshops clinicians would highlight the problems that this had brought in its wake, in particular as regards a worsening of doctor-patient relations: increasing corruption as the only means of ensuring access to good quality care; decreasing trust between doctors and patients; increasing litigation against doctors and hospitals; an epidemic of violence directed at doctors and nurses; and more. Recruiting potential research participants in such a climate raises particular challenges, which many workshop participants from China argued need to be taken into account in the planning and carrying out of medical research. For example, one speaker suggested that "patients, physicians/ investigators and health care administrators regularly confuse clinical trials with medical care" and that "some physicians/investigators seem deliberately to treat clinical trials as medical care". The fact was that participating in medical research could "save patients and their families from heavy economic burdens". In such a climate of commercialisation, another participant argued that "instead of empowering, informed consent can be disempowering if donors do not have the ability to nurture, sustain and develop themselves". And so the particularities of China's health care system in the 21st century raised challenges for the ethical governance of biomedical research which had to be addressed.

The kinds of discussions I have briefly summarised here concerned oversight of interaction between researchers and potential research subjects as a way of minimising risks of exploitation, undue influence and coercion. While not all were agreed on exactly how, there was some kind of agreement among many workshop and conference participants that the ways in which such interaction should be structured, organised, carried out and monitored needed to be adapted to a 'Chinese' context which was circumscribed in terms of culture as well as socio-economic stratification. It was through such differentiation – that required establishing the particularities of that which makes up Chinese contexts – that the ethical governance of biomedical research could be ensured. So in this sense differentiating was what would allow the adaptation of the universal to the particular. In the words of one workshop participant: "Basic values, such as respect, non-

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maleficence/beneficence and justice are shared by Western and Eastern cultures alike… though as Confucius said, 'By nature men are similar; by practice men are wide apart'.

Conclusion

In this article I have demonstrated how difference organises global negotiations about how to ensure that biotechnological research in a time of increasing global mobility is 'ethical'. On the one hand, difference is mobilised in such negotiations as a way to carve out certain competitive advantages that make a particular nation – such as China or the United Kingdom – an 'attractive' place to carry out biomedical research. On the other hand, difference is invoked to insist that institutionalised, 'universal' bioethical tools – such as national ethics committees, declarations, ethical review boards or informed consent procedures – be adapted to particular cultural, socio-economic contexts. That is to say, *difference matters* in global biotechnology

Much has been made of the emancipatory potential of difference in the mobilization strategies of marginalised groups against dominant narratives, groups or sets of actors as a way of "dissolving some of the strong structures of Euro-modernity at the level of theory by favoring flat alternatives; positing the fact that epistemic differences can be – indeed are – grounds for the construction of alternative worlds"[25]. What I have shown here is that difference can also be actively mobilised in those 'dominant' settings, as particular strategies of nation-building. By focusing on a specific forum of global negotiation – a three-year collaborative project between European and Chinese experts on the ethical governance of biomedical and biological research – I showed how difference organised the terms of debate among participants. In this sense, difference can be a leveller in that rather than invoking a universal global bioethics system it authorises multiplicity thereby invoking the particular. Hence, by shifting analytical focus to the governing of difference we are able to see the multiple ways in which it can be mobilised in various contexts – whether among marginalised groups or dominant sectors of society.

In the foregoing, I have not attempted to explain or account for differences between for example China and the United Kingdom, rather I have honed in on those occasions where difference was

actively made through global negotiations between European and Chinese scientists, clinicians, experts and others. Such mobilisations of difference played their part in the kinds of nation-building strategies that seek to establish a certain country as a global 'biotech power'.

Note on the author

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Endnotes

[1] See Bharadwaj, Aditya & Glasner, Peter (2009) *Local Cells, Global Science: The Rise of Embryonic Stem Cell Research in India*, London: Routledge; Gottweis, Herbert (ed) (2009) "Biopolitics in Asia", special issue of *New Genetics and Society*, 28(3); Reubi, David (2010) "The Will to Modernize: A Genealogy of Biomedical Research Ethics in Singapore", *International Political Sociology* (2010) 4, 142–158; Ong, Aihwa & Chen, Nancy (eds). 2010. *Asian Biotech: Ethics and Communities of Fate*. Durham and London: Duke University Press; Sunder Rajan, Kaushik (2006) *Biocapital: The Constitution of Post-Genomic Life*, Durham and London: Duke University Press; and Salter, Brian & Waldby, Catherine (eds) (2011) "Biopolitics in China", special issue of *East Asian Science, Technology and Society*, 5(3)

[2] National Science Foundation (2007) *Asia's Rising Science and Technology Strength*, Arlington: Division of Science Resources Statistics, National Science Foundation

[3] Gottweis 2009: 203-4

[4] Bharadwaj 2009: 20

[5] Ong & Chen 2010: 5

[6] Sung, Wen-Ching (2010) "Chinese DNA: Genomics and Bionation" in Ong, Aihwa & Chen, Nancy (eds). 2010. *Asian Biotech: Ethics and Communities of Fate*. Durham and London: Duke University Press, pp. 263-292

[7] Thompson, Charis (2010) "Asian Regeneration? Nationalism and Internationalism in Stem Cell Research in South Korea and Singapore" in Ong, Aihwa & Chen, Nancy (eds). 2010. *Asian Biotech: Ethics and Communities of Fate*. Durham and London: Duke University Press, pp. 95-117

[8] Escobar, Arturo (2008) *Territories of Difference: Place, Movements, Life, Redes*, Duke and London: Duke University Press

[9] See following reports for summaries of BIONET's work: BIONET (2007a) *Informed consent in reproductive genetics and stem cell technology and the role of Ethical Review Boards*, 1st Workshop Report, Peking University Health Science Centre, Beijing, 1 – 5 April 2007; BIONET (2007b) *Ethical governance of reproductive and stem cell research and stem cell banks*, 2nd Workshop Report, CAS-MPG Partner Institute for Computational Biology in cooperation with the Shanghai Medical Ethics Association, Shanghai, 9 – 11 October 2007; BIONET (2008a) *Ethical governance of reproductive technologies, therapeutic stem cells and stem cell banks*, Conference Report, Institute of Reproduction and Stem Cell Engineering, Central South University & Reproductive and Genetic Hospital, CITIC-Xiangya, Changsha, P.R. China, 1-3 April 2008; BIONET (2008b) *Clinical Research and Clinical Research Organisations in EU-CN research –*

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ethics and governance issues, 3rd Workshop Report, Research Center for Bioethics, Peking Union Medical College & Chinese Academy of Social Sciences, Xi'an, 9 – 12 September 2008; BIONET (2009) Biobanking & Personal Genomics: Challenges and Futures for EU-China Collaborations, 4th Workshop Report, Beijing Genomics Institute at Shenzhen, Shenzhen, 27 – 29 April 2009; BIONET (2010a) *Recommendations on best practice in the ethical governance of Sino-European biological and biomedical research collaborations*, BIONET Expert Group Report, London: London School of Economics; BIONET (2010b) *Ethical Governance of Biological and Biomedical Research: Chinese – European Co-operation - Final Report*, London: London School of Economics; all available at: http://www2.lse.ac.uk/BIOS/research/BIONET/

[10] From 2007 to 2009 I was Research Fellow for the BIONET project, based at the BIOS Centre, London School of Economics. I gratefully acknowledge all BIONET partners as well as the funders of BIONET which included the European Commission Sixth Framework Programme (FP6), the United Kingdom's Medical Research Council (MRC) and the Wellcome Trust.

[11] Rose, Nikolas (2006) *The politics of life itself : biomedicine, power, and subjectivity in the twenty-first century*, Princeton: Princeton University Press.

[12] I have chosen not to identify the persons from which the quotes that follow are taken. Information on the composition and participation at BIONET workshops can be found in the various workshop reports (see http://www2.lse.ac.uk/researchAndExpertise/units/BIONET/). What I am analysing here are the contours of the negotiations that I observed and recorded during these events as opposed to ascribing a certain 'view' to an individual or institution. It is the *negotiations* that are the object of my analysis here.

[13] See BIONET reports.

[14] Sunder Rajan, Kaushik (2010) "The Experimental Machinery of Global Clinical Trials: Case Studies from India" in Ong, Aihwa & Chen, Nancy (eds). 2010. *Asian Biotech: Ethics and Communities of Fate*. Durham and London: Duke University Press, pp. 55-80

[15] Jack, Andrew & Yee, Amy (2007) "China overtakes India in Drug Testing", *Financial Times*, 27 August 2007

[16] Reubi 2010

[17] A scandal surrounding the faking of data in the development of Motorola-chips at Jiaotong University.

[18] Petryna, Adriana (2007) "Clinical Trials Offshored: On Private Sector Science and Public Health", *BioSocieties* 2(1): 21–40; Petryna, Adriana (2005) "Ethical variability: Drug development and the globalization of clinical trials", *American Ethnologist*, 32: 183–197

[19] See also Sunder Rajan 2006

[20] See for example, Petryna, Adriana (2009) *When Experiments Travel: Clinical Trials and the Global Search for Human Subjects*, Princeton: Princeton University Press; Geissler, P. Wenzel, Kelly, Ann, Imoukhuede, B, Pool, R. (2008) '"He is now like a brother, I can even give him some blood"-relational ethics and material exchanges in a malaria vaccine "trial community" in The Gambia', *Social Science and Medicine*, 67(5): 696-707; and Molyneux, C. Sassy, Wassenaar, D. R., Peshu, N. and Marsh, K. (2005) '"Even if they ask you to stand by a tree all day, you will have to do it (laughter)!" - community voices on the notion and practice of informed consent for biomedical research in developing countries', *Social Science and Medicine* 61(2): 443-454

[21] US Government (1949) "Trials of War Criminals Before the Nuremberg Military Tribunals Under Control Council Law No. 10", Vol. 2, Nuremberg, October 1946 - April 1949, Washington, DC: US Government Printing Office, pp 181-182.

[22] This observation is not unique to China as similar points have been made in other countries, especially where research takes place in rural areas or so-called 'resource-poor' settings, see Geissler, P. Wenzel. & Molyneux, Catherine (eds.) (2011) *Evidence, Ethos and Experiment. The Anthropology and History of Medical Research in Africa*. Berghahn Books.

[23] An important component of the BIONET project was an Expert Group co-chaired by Prof. Christoph Rehmann-Sutter and Prof. Qiu Renzong whose remit it was to prepare recommendations on best practice in the ethical governance of Sino-European biomedical research collaborations. See BIONET 2010a.

[24] BIONET 2010a: 46-47

[25] Escobar 2008: 310-311